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Non-medical factors influencing peritoneal dialysis utilization: the Swiss experience

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Introduction

The use of peritoneal dialysis (PD) in the treatment of patients with end-stage renal disease (ESRD) fluctuates considerably from country to country [1]. The proportion varies from 0 to above 60% of the total dialysis population and is most often explained by socio-economic, health care or reimbursement factors [1–4]. This disparity, however, also exists at the regional or at the centre level and may also change over time within the same unit, meaning that other factors must play a role. Based on the Swiss experience over the last few years, the present review analyses those factors and proposes some strategies towards a more homogeneous use of dialysis modalities.

Some facts about PD utilization

Over the past decade several studies have compared the outcomes of PD *vs* haemodialysis (HD) and, despite some conflicting reports, no major difference in patient survival has been observed [5,6]. In addition, an absolute medical contra-indication for one of those therapies remains rare for the majority of patients who have to start ESRD therapy [7]. PD has now been proposed to become the initial part of an integrated ESRF therapeutic plan [8,9].

These observations suggest that the choice of a dialysis treatment modality is based on factors other than the medical superiority of one technique over the other. Some of the non-medical factors have been identified, in particular within the USA [2,10]. In a survey covering most European countries, the USA and Japan, Gokal *et al*. [1] have shown that large differences exist in the incidence and prevalence of ESRF and in the distribution of the different treatment modalities. The differences were attributed mostly to the type of social security system: 'public' systems with a low prevalence and incidence of ESRD and a homogeneous distribution between HD, PD and renal transplantation; 'private' systems with a high prevalence, incidence and a main development of HD; and the so-called 'mixed' systems with an intermediate distribution pattern.

The existing regional and centre disparities, however, indicate that the distribution between HD and PD therapies does not exclusively depend on the type of social security system. Changes may also occur over time as illustrated by the evolution in the number of patients treated by chronic dialysis over the last 5 years in Switzerland (Figure 1): the slow increase in the total number of dialysis patients is almost exclusively due to centre HD, while the PD patient numbers stabilized but with more and more automated PD (APD) treatments. While in 1993 PD was used in 18% of the total Swiss dialysis population, this percentage has declined and now stabilized at 11%; in the meantime the proportion of APD has increased from 9 to 43% of all the PD patients. A recent survey made among the 19 dialysis units in the French-speaking part of Switzerland revealed that only eight of those units practice PD and that the percentage of PD patients varied between 0 and 23% of their population treated by dialysis [11].

In addition, regional disparities in the distribution of chronic kidney disease (CKD) must also be taken into account: a comparison between two different Swiss cantons revealed that the canton of Vaud treated 340 dialysis patients/million inhabitants (compared to a Swiss mean of 329), while this prevalence was at 476 in the canton Wallis. The percentage of dialysis patients treated by PD was at 19% in Vaud and only 6% in Wallis [12]. This difference is partly explained by the higher prevalence of adult polycystic kidney disease in Wallis, a medical factor that might restrict the use of PD but certainly does not explain the lower transplantation rate. Based on this survey it appeared that, while

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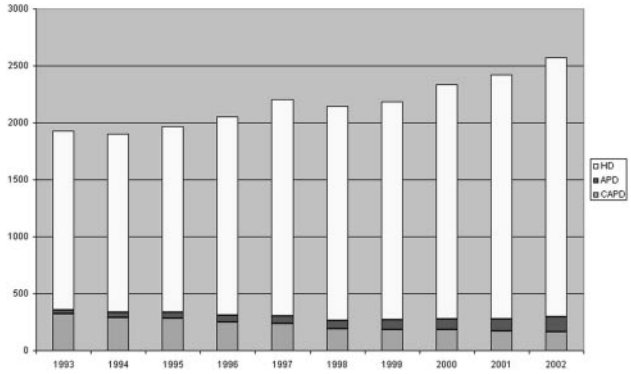

Fig. 1 Evolution of the number of chronic dialysis patients in Switzerland from 1993 to 2003 according to treatment type. HD, haemodialysis; APD, any form of automated peritoneal dialysis; CAPD, continuous ambulatory peritoneal dialysis.

Table 1. Evolution of the use of PD and automated PD in Switzerland according to linguistic regions

	1998	1999	2000	2001	2002
French-speaking part					
PD as % of dialysis patients	12.1	10.6	10.4	10.2	10.6
Automated PD (%PD)	58.5	61.4	56.8	60.5	62.4
German-speaking part					
PD as % of dialysis patients	12.2	13.0	12.6	12.0	11.8
Automated PD (%PD)	14.0	21.7	26.8	29.9	35.4

Table 2. Non-medical reasons that influence PD utilization

1. Financial factors
Reimbursement rates
2. Centre factors
Dialysis staff opinion or bias
PD experience
HD availability
3. Patient factors
Opinion of primary care physician
Distance to the unit
Availability of dialysis partner
Timing of nephrological referral
4. Socio-economic factors
Structure of dialysis program
Number of dialysis centres
5. Cultural factors
Attitude towards chronic disease
Attitude towards home therapy

Table 3. Evolution of the number of dialysis patients in Switzerland according to the centre structure

	1998	1999	2000	2001	2002
HD public centres	1583	1600	1659	1708	1793
HD private centres	299	315	400	439	484
PD public centres	256	259	271	267	280
PD private centres	5	9	8	10	14
Total	2143	2183	2338	2424	2571

patient age or co-morbidities were comparable, the canton Wallis treated—mostly due to medical opinion—fewer patients with PD and kidney transplantation, illustrating once again the role of other factors.

Interestingly, even within the PD treatment modalities, the use of automated PD (APD) *vs* CAPD seems to be centre- and/or region-dependent. While the French-speaking part of Switzerland has largely moved to APD, used in >60% of the PD patients, this trend is less marked and more recent in the German-speaking part (Table 1). This difference is most probably explained by patient attitudes towards autonomous dialysis and preferences concerning daytime activities.

Which factors influence the use of PD?

The factors which might influence the use of PD are given in Table 2.

Economic factors

The reimbursement rates foreseen for centre haemodialysis do allow centres some financial benefit depending on the centre type, organization and social security regulations [1,2,10]. The same does not apply to PD, since no reimbursement is foreseen in Switzerland for the supervision made by the centre staff when dialysis is practiced at home. This means that in Switzerland at least, home therapy has until now been a rather idealistic therapy applied by idealistic nephrologists.

As a consequence, the vast majority of the Swiss PD patients are treated in public centres, with only around 10 patients being treated in private centres (Table 3). Among the 70 Swiss dialysis units, 32 practice PD (46%), but when subdivided according to their structure, 30 out of 51 public units (59%) and only 2 out of 19 private units (11%) practice PD.

Centre factors

It has been recognized that the individual opinion—or bias—of the nephrologist and also of the nursing staff plays a major role in the decision taken when they transmit information to a patient going to start dialysis therapy [13]. In a USRDS survey, only 25% of the HD patients remembered having been informed about PD, but 68% of the PD patients recalled the HD option being discussed with them [14]. The dialysis modality distribution is also very heterogeneous between and within several countries [15]. When asked about their personal opinion on the optimal dialysis technique mix, Canadian nephrologists gave numbers around 37% for PD that corresponded to their real practice [16]; American nephrologists in contrast thought that

31% of PD would be ideal while the actual number was 14% [17].

Along the same lines, HD will be systematically favoured when insufficient professional experience in the PD technology is at hand. This will be even more the case when a HD centre structure and trained staff are available: the marginal cost of a new additional patient will automatically favour the technique most at hand. With 70 centres for a population of 7.5 million inhabitants, Switzerland has one of the highest dialysis centre densities in the world. The unexpected increase in CAPD patient numbers seen in 2002 was probably due to the fact that two large dialysis units were overcrowded and faced with an acute problem of unavailable haemodialysis posts.

Patient factors

Even when objectively oriented by the nephrology staff, some pre-existing patient factors may also influence their final choice. Previous information given by the primary care physician or another nephrologist might play a fundamental role, but other factors must also be considered: travel distance to the unit, socio-familial factors such as presence of a spouse or housing facilities, and more individual factors such as age, education, profession and co-morbidities [18]. Patient preferences may also be influenced by totally dialysis-free days, daytime activities or body image. Within a group of 150 consecutive patients starting dialysis, Prichard [7] illustrated that among the 84 who were not treated by one of the techniques for preferential medical or social reasons, 37 chose PD and 37 HD; among the latter, 15 finally performed self- or home-therapy, 7 had previously been treated by HD, 4 refused PD and 11 were late referrals to the dialysis unit.

The deleterious effect of late referral on the preferential choice of HD has been demonstrated repeatedly [19–21]. Blake [10] has shown that, in his unit, of 161 consecutive new ESRF patients, 22% were treated by PD, but this percentage rose to 32% for those who had received previous information, and was only 4% when this information could not have been given.

In their European multi-centre survey, Lameire *et al.* [22] demonstrated that in patients referred late, HD is chosen much more often than among those who are referred early. This observation, however, was not made in 4 of the 13 centres, illustrating again that this therapeutic choice is a multi-factorial process.

Socio-economic factors

The structure of the dialysis program within any given country or region and/or the dialysis infrastructure and staffing at hand in any particular centre may also influence the development of any given technique. In most units, it is easier to start an additional patient on an existing HD post than to go through the more time- and staff-consuming procedure of PD training.

Cultural factors

Finally, the place of an autonomous therapy may also be influenced by persistent or changing cultural attitudes towards the chronic disease state. This factor explains why home therapy is almost non-existent in Japan and may also partly elucidate the changing pattern observed in Europe [23].

Some proposals towards a more homogeneous use

All possible therapy options should be offered to any patient with ESRD. However, the nephrologist should not ignore the economic burden placed by dialysis treatment programmes on social security systems. In all cost evaluations made, centre HD appears as the most expensive treatment modality [3,10]. It is therefore our duty to prevent all potential bias that interferes with therapeutic choices when expensive options are chosen.

Social security measures

The reimbursement rate of the autonomous dialysis treatment modalities should not penalize those therapies. While a financial profit can be made today with most of the present reimbursement rates for centre dialysis, autonomous therapies usually result in a loss of money for the dialysis unit. A fee for the setting-up and running of an autonomous dialysis program in addition to the patient regular consultations and back-up should be implemented. On the other hand, reimbursement of the workload assumed by the patient or his eventual dialysis partner should also be taken into account.

An evaluation of the global costs (instead of the dialysis technique costs) will also provide better comparative data: the inclusion of hospitalization costs, travel time to the unit, additional costs of surgery and drugs, paying-off of dialysis equipment, personnel salaries, etc will allow a more precise comparison than the net dialysis reimbursement rates [24].

Educational measures

In order to better inform their patients about all existing ESRD therapeutic possibilities, primary care physicians as well as nephrologists should receive a more detailed education at the pre-, post- and continuous-education level. As yet, the advantages, indications and contra-indications of ESRD therapy options are seldom part of the general medical teaching programs. The same applies to most of the nurses training programs. In several units, PD prescription is done mostly by the PD nurses with little involvement of the nephrologist; and the increased complexity of the newer PD techniques [25] will not necessarily facilitate more medical commitment. Recently, Schaubel *et al.* [26] have shown that a centre's experience and degree of specialization toward PD strongly impact on PD

outcome. Therefore, the PD curriculum set-up by the International Society for Peritoneal Dialysis should become an integrated part of all nephrological training programs at the postgraduate level [27]. It might also be questioned whether nephrologists should receive an education in health economics, taking into account the tremendous but difficult to evaluate expenses necessitated by the ESRF programs in each country [24,28].

Patient information measures

An integrated collaboration between primary care physicians and nephrologists should be set up to prevent the late referral pattern and allow not only better treatment of the progressing CKD and its complications but also more complete and objective informing of the patients and their families [20,21,29,30]. This information should be adapted to the patient and his family at all levels of progressive CKD depending on their level of understanding and also on the progression rate of their CKD: patients do not need to be informed about the respective advantages of dialysis therapies when they have an almost stable or still very moderate decline in their kidney function.

The advantages of a multidisciplinary approach involving other para-medical professions and other patients have already been demonstrated [29].

PD logistics measures

PD utilization should not be hampered by barriers such as insufficient stockpiling space from infrequent material delivery or transient partner unavailability. The availability of para-medical personnel at home or in nursing homes for transient help and advice has proven very useful [31]. The development of efficient and easy-to-use APD cyclers may also convince more patients to tackle the burden of autonomous therapy by not spending much day time for exchanges and making training and daily use less demanding. Finally, better prevention or treatment of the side-effects or complications of PD therapy (peritonitis prevention, more biocompatible dialysis solutions, etc) will also provide better long-term use.

Conclusions

It is a challenge to the nephrological community to offer the best options in all aspects of dialysis and transplant therapies to patients with ESRF at a cost that remains within the possibilities of health care budgets. Several non-medical factors presently interfere with the prescription of dialysis therapies. Most of those factors tend to favour centre haemodialysis.

Steps towards a more homogeneous PD utilization have been identified. Their implementation necessitates measures to be implemented at three levels: national (social security measures, reimbursement rates), regional (pre- and post-graduate education) and centre stage (education and communication, logistics).

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